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L2	4	(methanotrophic near2 bacteria) and (animal near2 feed)	USPAT	OR	OFF	2005/03/31 15:09
L3	68	(methanotrophic near2 bacteria)	USPAT	OR	OFF	2005/03/31 15:10
L4	1	l3 and ((produce or produced or make or production or making or manufacture or generate or manufacturing or manufactured or generating or generated) near2 feed)	USPAT	OR	OFF	2005/03/31 15:13

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L3   ANSWER 1 OF 5 USPATFULL on STN
AN   2004:334353 USPATFULL
TI   Use of a single-cell protein as feed for fish and shellfish
IN   Kleppe, Gunnar, Hafrsfjord, NORWAY
PI   US 2004265431   A1   20041230
AI   US 2004-486693   A1   20040708 (10)
       WO 2002-GB3795   20020816
PRAI   GB 2001-20047   20010816
DT   Utility
FS   APPLICATION
LREP   SUGHRUE MION, PLLC, 2100 PENNSYLVANIA AVENUE, N.W., SUITE 800,
       WASHINGTON, DC, 20037
CLMN   Number of Claims: 16
ECL   Exemplary Claim: CLM-001-8
DRWN   No Drawings
LN.CNT 254
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB   The invention relates to a feed material for fish and shellfish, for
       example a feed material for molluscs such as mussels. In particular, the
       invention relates to the use of single-cell protein materials and their
       derivatives (especially homogenized and/or autolysed derivatives) as a
       feed for fish and shellfish. A preferred single-cell material for use in
       the invention is that derived from a microbial culture comprising
       Methylococcus capsulatus (Bath) (strain NCIMB 11132), Ralstonia sp. DB3
       (strain NCIMB 13287) and Brevibacillus agri DB5 (strain NCIMB 13289),

optionally in combination with Aneurinibacillus sp. DB4 (strain NCIMB 13288).

L3 ANSWER 2 OF 5 USPATFULL on STN
AN 2004:190241 USPATFULL
TI High growth methanotrophic bacterial strain
IN Koffas, Mattheos, Wilmington, DE, UNITED STATES
Odom, James M., Kennett Square, PA, UNITED STATES
Schenzle, Andreas, Zuerich, SWITZERLAND
PI US 2004147011 A1 20040729
AI US 2003-701200 A1 20031104 (10)
RLI Division of Ser. No. US 2001-934868, filed on 22 Aug 2001, GRANTED, Pat. No. US 6689601
PRAI US 2000-229858P 20000901 (60)
DT Utility
FS APPLICATION
LREP E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805
CLMN Number of Claims: 31
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 5659
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A high growth methanotrophic bacterial strain capable of growth on a C1 carbon substrate has been isolated and characterized. The strain has the unique ability to utilize both methane and methanol as a sole carbon source and has been demonstrated to possess a functional Embden-Meyerhof carbon flux pathway. The possession of this pathway conveys an energetic advantage to the strain, making it particularly suitable as a production platform for the production of biomass from a C1 carbon source.

L3 ANSWER 3 OF 5 USPATFULL on STN DUPLICATE 1
AN 2002:251243 USPATFULL
TI High growth methanotrophic bacterial strain
IN Koffas, Mattheos, Wilmington, DE, UNITED STATES
Odom, James M., Kennett Square, PA, UNITED STATES
Schenzle, Andreas, Zuerich, SWITZERLAND
PI US 2002137190 A1 20020926
US 6689601 B2 20040210
AI US 2001-934868 A1 20010822 (9)
PRAI US 2000-229858P 20000901 (60)
DT Utility
FS APPLICATION
LREP E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805
CLMN Number of Claims: 31
ECL Exemplary Claim: 1
DRWN 6 Drawing Page(s)
LN.CNT 5562
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A high growth methanotrophic bacterial strain capable of growth on a C1 carbon substrate has been isolated and characterized. The strain has the unique ability to utilize both methane and methanol as a sole carbon source and has been demonstrated to possess a functional Embden-Meyerhof carbon flux pathway. The possession of this pathway conveys an energetic advantage to the strain, making it particularly suitable as a production platform for the production of biomass from a C1 carbon source.

L3 ANSWER 4 OF 5 BIOBUSINESS COPYRIGHT (c) 1998 The Thomson Corporation. on STN
AN 92:20524 BIOBUSINESS
DN 0431604
TI Origin of phage particles in culture fluids during the industrial production of fodder protein with the use of **methanotrophic**

bacteria: The role of the bacteria in the discontinuing the fermentation process.

AU LOBANOV A O; TURIN V S; KRYLOV V N
CS ALL-UNION RES. INST. GENET. SEL. IND. MICROORG., MOSCOW 113545, RUSSIA.
SO BIOTEKHNOLOGIYA, (1992) NO.1, P.4-8.
FS NONUNIQUE
LA RUSSIAN
AB There is a direct confirmation of the possibility that the phage lysis of the attending cultures may cause the death of the main culture in the article. Besides reviewed are the properties as follows: data received during electronic-microscope observations of bacteria during continous fermentation proving the existing phages, specific for bacteria, which are in the special physiological state caused probable by the continuous character of fermentation.

L3 ANSWER 5 OF 5 FEDRIP COPYRIGHT 2005 NTIS on STN
AN 2005:43215 FEDRIP
NR ENRGY 77721
NC DOE/SBIR, FG05-93ER81483
TI Biological Removal of Coal Mine Methane
SF Principal Investigator: Clausen, E.C.; P.O. Box 3682, Hwy. 112, Fayetteville, AR, 72702
CSP Engineering Resources, Inc., Biomass Research Center
CSS Supported By: USDOE Energy Research.
DB Sep 8, 1993
DE Apr 1, 1994
FS Department of Energy
SUM Atmospheric concentrations of methane are currently increasing at a rate of one percent annually. Emissions of this greenhouse gas from coal mines now amount to about 65 million tons annually, and are increasing steadily. Methane adsorbed onto internal coal surfaces is released as the coal is mined. This gas is vented to the atmosphere from gob wells or with ventilation air. The methane concentrations are dilute, and recovery is rarely economical. This project involves a novel concept to convert waste methane into a high value product, single cell protein (SCP) for animal feed. **Methanotrophic bacteria** convert methane into cell mass with a high protein content that has been shown to be a suitable supplement for protein in animal and poultry diets. The fermentation is aerobic, requiring at least an equal volume of oxygen with methane; consequently, dilute methane concentrations are required. Phase I will screen the various methanotrophs to select those that have the fastest growth rates and highest yields of SCP. Continuous culture studies will be conducted with the best bacteria to define reaction kinetics and minimal reactor volume. The design and economics of a process to produce SCP from coal mine methane will be projected to determine feasibility. Phase II will define engineering and marketing parameters for large scale production of SCP. A prototype unit will be constructed and operated in phase III to demonstrate scale-up. Anticipated Results/Potential Commercial Applications as described by the awardee: There are 180 underground coal mines that discharge large quantities of methane into the atmosphere. The average discharge from the ten largest methane emitting mines is 11 million cubic feet per day. Conversion of the gas from one of these mines into SCP would generate $30 million annually, requiring nominal capital and operating cost. Therefore, significant economic and environmental incentives exist for commercialization of the technology.

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